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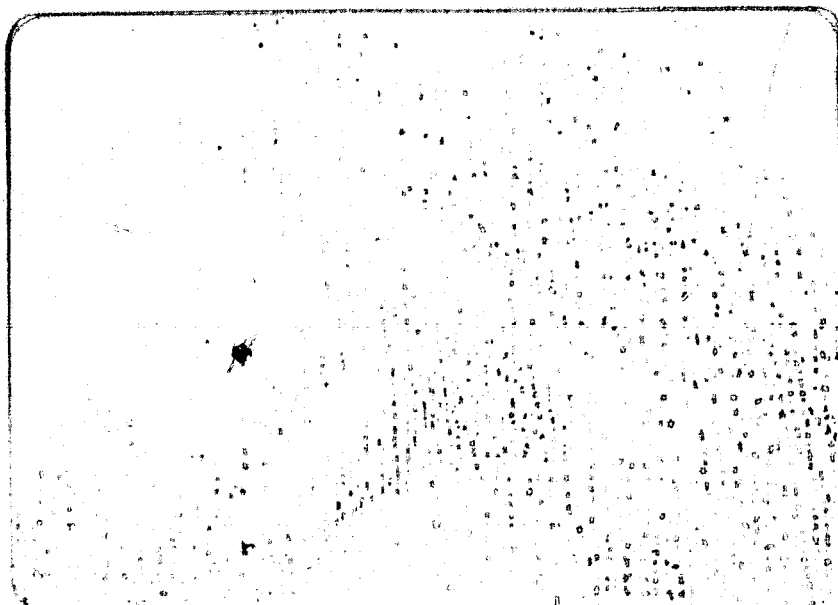
(E84-10071) CNPQ/INPE LANDSAT SYSTEM
Report of Activities, 1 Oct. 1982 - 30 Sep.
1983 (Instituto de Pesquisas Espaciais, Sao
Jose) 27 p HC A03/MF A01 CSCL.08B

N84-16618

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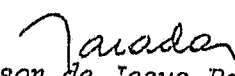
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CONSELHO NACIONAL DE DESENVOLVIMENTO CIENTÍFICO E TECNOLÓGICO



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| 14. Abstract/Notes Original photography may be purchased from EROS Data Center Sioux Falls, SD 57198 This report presents the current status of the Brazilian LANDSAT facilities and the results achieved during the period of October 01, 1982, to September 30, 1983. | | | |
| 15. Remarks Prepared for the EGSOWG (Landsat Ground Station Operations Working Group) and DDWG (Data Distribution Working Group) meetings of November, 1983 (USA). | | | |

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1. RECEIVING AND RECORDING

INPE's Receiving Station at Cuiabá operates two independent tracking and receiving systems, both capable of receiving band-S Landsat transmissions. The old system, installed in 1973, is now kept mainly as a backup for the new one, installed in August, 1982, to handle Landsat-4 reception in both S and X bands. This new system is currently used to receive Landsat-4 MSS while TM transmissions to ground stations do not start. After the new system was installed, the old one was used to record RBV from Landsat-3, up to March 31, 1983, and also Landsat-4 MSS for almost 6 months, after the new antenna was struck by lightning in October, 1982, which caused severe damages in several equipments. The existence of the backup allowed continued operation while they were repaired.

The recording subsystem has undergone a modification in its telemetry data recorder to enable it to record 8 kbps (formerly only 1 kbps could be recorded) Landsat-4 telemetry. This modification was concluded in December 28, 1982.

In November, 1982 a new HDDR was added to the recording subsystem, to allow TM recording. This is a NASA-compatible Martin-Marietta 28-track serial-in-serial-out machine, that can also record MSS at reduced speed and can back up the 10-year-old Ampex FR-1928 in case of need. Test transmissions of PN code in band X, on February 5 and 6, 1983, were activated by NASA to check the system, which performed successfully.

In September, 1983, a moving-window display facility was added for monitoring TM recorded signal quality and estimating cloud cover on site. This completed the new receiving and recording system.

From October 01, 1982 to September 30, 1983 the station recorded:

- 3 MSS passes from Landsat-3
- 96 RBV passes from Landsat-3
- 618 MSS passes from Landsat-4.

At present, only Landsat-4 MSS and telemetry data are being recorded, but the station is ready for receiving and recording TM when the time comes. The RCA TR-70 RBV recorder will be sent to the Processing Station at Cachoeira Paulista to be used in playback, as a backup to the existing one.

The Receiving Station continues also to support the NASA "Back-up Plan" with the NASA-installed 14-track HDDR.

2. PROCESSING LABORATORIES

The Electronic and Photographic Laboratories operated normally in the period from October 1982 to September 1983. First generation film originals and CCTs were produced under user request only. MSS Quick-look images, on the other hand, were produced systematically from all acquired passes and constitute the basis of the Acquired Images data base, started in 1982.

This data base grows chronologically (quick-look production takes place normally 10 to 15 days after acquisition, which was not certain with the Processed Images), and this allows microfilming to follow closely the acquisition date, in contrast to the previous situation when a long delay could pass between acquisition and distribution of microfilmed imagery to the User Services Centers.

The Cartographic Applications Laboratory, created in 1982 to carry out cartography-related tasks, has achieved, in cooperation with the Army cartographic agency, during the mentioned period, the publication of two 1:250,000 controlled image charts (see one of them - the Campo Grande chart - in Annex A) and has already provided the precision-processed imagery necessary for the production of three additional charts. Besides that, 67 scenes were produced for the updating

of existing maps and charts by the official mapping agencies in Brazil.

From October 1982 to September 1983, the Processing Labs delivered:

- In 70 mm B & W originals:
 - 217 new MSS passes;
 - 124 regenerated MSS passes;
 - 1 new RBV pass;
 - 1 regenerated RBV pass.
- In Digital form:
 - 139 MSS Computer Compatible Tape (CCT) sets
- In Quick-look images:
 - 609 full MSS passes.

RBV processing has been suspended until new shading - correction tables are established. These tables are time-consuming to derive due to the fact that INPE does not have RBV in digital form, which prevents the use of computer help in the easiest form.

During the last months several civil and electrical works were carried in the Laboratories to prepare the building to receive the new TM processing system, expected to arrive in Brazil in mid-November.

This new processing system is built around a VAX-11/780 and has a 5-inch Electron Beam Recorder as the main image generation device. The original images are produced in 1:2,000,000 scale, in black-and-white (see a 1:1,000,000 enlargement of a sample image in Figure 1). Having a geometric fidelity comparable (0.01%) to that of considerably more expensive Laser Beam Recorders, the EBR allows a higher system throughput than otherwise achievable within the same price range, for not requiring resampling of any sort to generate corrected images.

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W 84 30

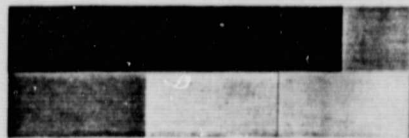
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BRASIL-CNPq/INPE



019D059

TM4-00130-T076

25JUL82 WRS: 019D059 HDE R p H 'C: N41:47/E000:00 TM - LANDSAT 4
 UTM G=3 E=6 184x185km N: N41:46/E000:00 BANDA(S): 0200700
 ZONA UTM 16

SOL: C156 AZ122 R191 T/C: 82206-154122.2
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Figure 1 - TM image generated by the new CNPq/INPE processing
system
(Area: Detroit, USA; Date: July 25, 1982; HDDr provided by NASA)

CCTs will be initially produced containing video in geometrically raw form. After end of acceptance in Brazil studies will be started concerning geometric corrections for CCTs.

An update of the Station plans concerning TM processing is presented in Table 1.

3. DATA DISTRIBUTION

From October 1982 to September 1983 INPE distributed a total of 3895 images (see quarterly summaries in Annex B), 3756 being photographic frames and 139 digital products (CCTs). The last Price List update was on April 1983, consisting only of dropping the NOAA distribution fee from non-Landsat-4 products (see Annex C).

At this moment, we register 1402 Landsat data users, 227 of them from foreign countries.

The quarterly issues of the Acquired Images Catalog are being distributed to subscribers, with significant reduction of the time between data acquisition and the availability of information about them, with respect to the discontinued Processed Images Catalog.

A Landsat-4 WRS coverage map was prepared by the Cartographic Applications Lab and is distributed to all users (see Annex D).

A sixth User Services Center was established in Manaus in April, 1983, giving assistance to and receiving requests from users from the Northern Region of Brazil (see Figure 2). The former five Centers operated normally during the period of this report. Intention exists to install remote computer terminals in these centers, giving them access to the data bases in the Processing Labs at Cachoeira Paulista. The arrival of the VAX-11/780 Computer system is a key factor

in this idea, once the existing PDP-11/34 is already overloaded with the local use, mainly due to its minute disk capacity (5 MB). Several applications running on it will be transported to the VAX for enhanced performance and availability.

One of the first applications to be transported will be a recently implemented (August 1985) Order and Production Management system, developed in-house to integrate and supersede the manual procedures of order handling and production schedule + control in the processing labs. It is analogous, in essence, to the INORAC system of the EROS Data Center, although probably an order of magnitude less sophisticated. Nevertheless, it represented a milestone in the activities of INPE's Image Generation Department.

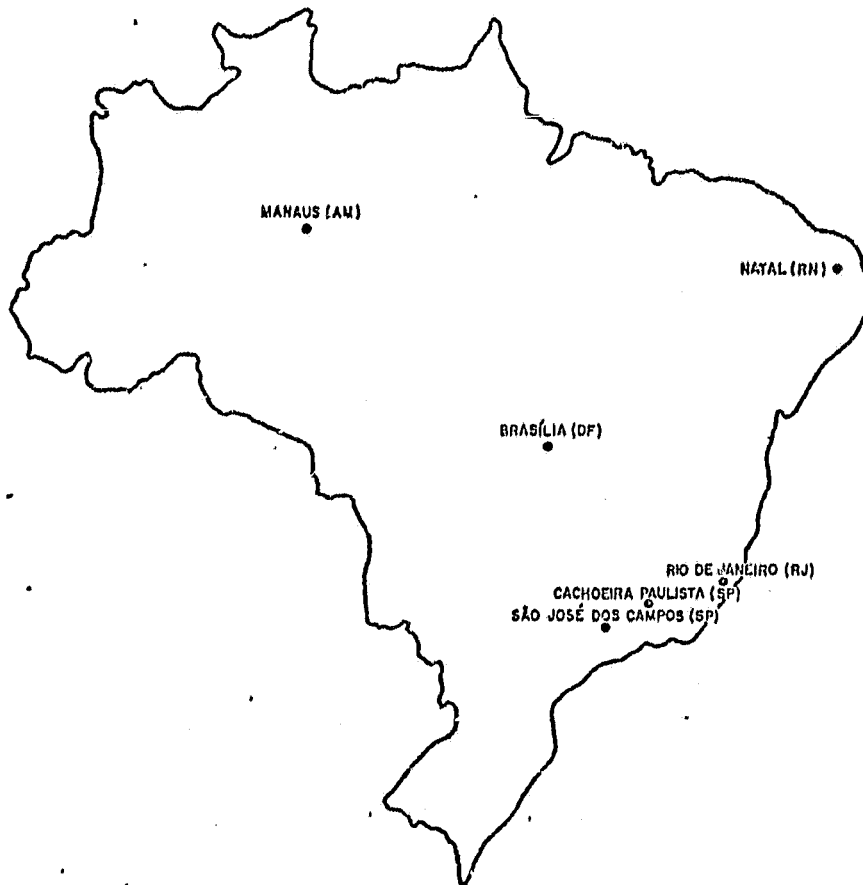


Fig. 2 - User Services Centers in Brazil

TABLE 1

BRAZIL STATION PLANS FOR TM PROCESSING CAPABILITY

| OPERATIONAL PROCESSING DATE | PLANNED OUTPUT PRODUCTS | | |
|-----------------------------------|--------------------------------|-------------------|--|
| | TYPE | VOLUME | FORMAT |
| 3/84 | Quick-look film (1 band) | Whole acquisition | Average Earth Rotation Corrected |
| | Bulk Film Product (4 bands) | 5 scenes/day | System corrected |
| | CCT (7 bands) | 2 scenes/week | Radiometrically corrected; geometric model included |
| 7/84 | Bulk Film Product (4 bands) | 20 scenes/day | System corrected |
| | CCT (7 bands) | 3 scenes/week | Radiometrically corrected; along- scan geometric corrections applied; geometric model included |
| 12/84 | Precision Film Product | 3 scenes/week | System corrected + GCPs |

ANNEX A

THE CAMPO GRANDE 1:250,000 SCALE

CONTROLLED IMAGE CHART

ANNEX B

DATA ACQUISITION, PROCESSING AND

DISTRIBUTION SUMMARIES

- B.1 Scenes Received and Recorded 1973-1983
- B.2 Images Distributed to Users 1973-1983
- B.3 CCTs Produced to Users 1973-1983
- B.4 Images and CCTs - quantity and revenue 1973-1983
- B.5 Quarterly Sales/Distribution Summaries
October, 1982 to September, 1983

map
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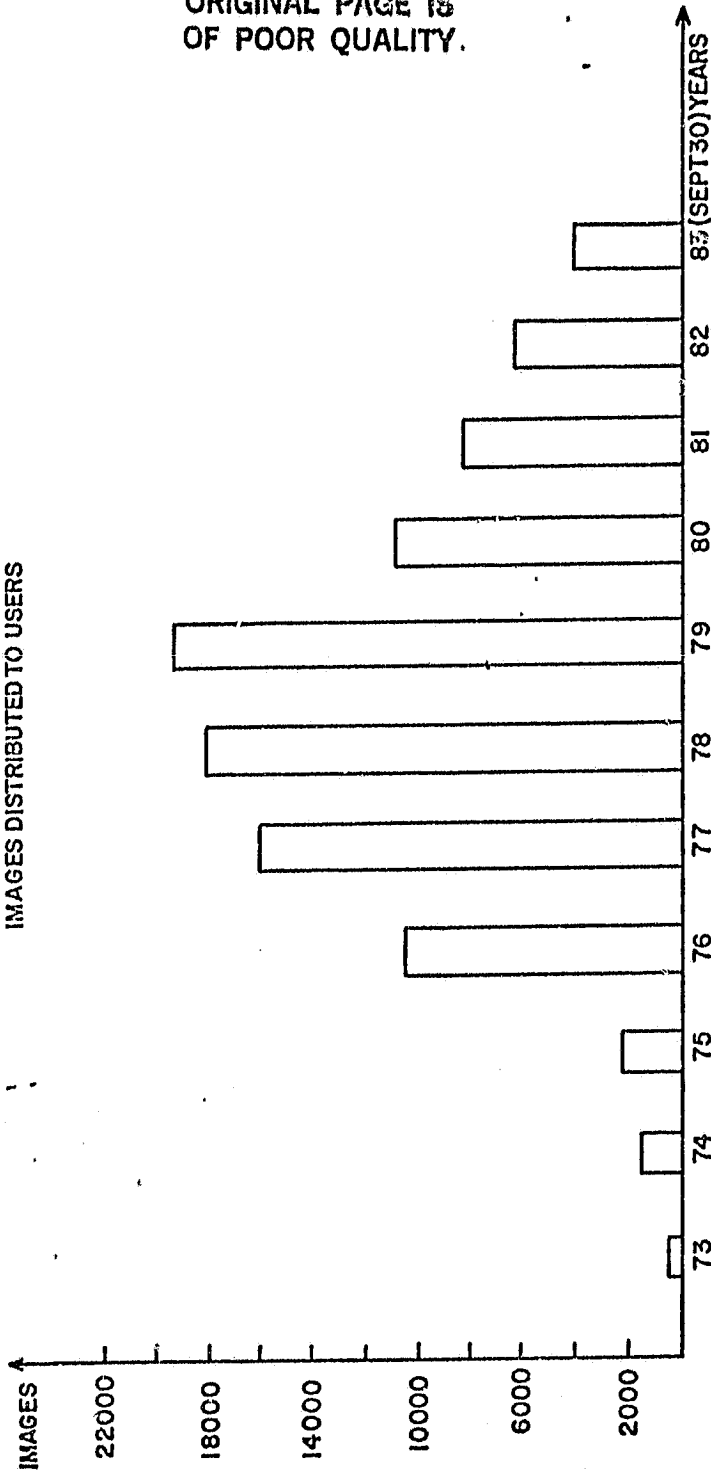
BRAZIL
Ct.Pq/INPE - LANDSAT SYSTEM
SCENES RECEIVED AND RECORDED
x
SCENES CONVERTED TO IMAGES

| RECEIVED & RECORDED | | 1973 (may) | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 (sept30) |
|---------------------|-------|---------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|------------------|
| SATELLITES | YEARS | | | | | | | | | | | |
| | | | | | | | | | | | | |
| LANDSAT 1 | MSS | 6114 | 14674 | 23112 | 32528 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| | RBV | — | — | — | — | — | — | — | — | — | — | — |
| LANDSAT 2 | MSS | — | — | 1550 | 3370 | 19632 | 23952 | 32532 | 38626 | 51958 | 52948 | ↑ |
| | RBV | — | — | — | — | 288 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| LANDSAT 3 | MSS | — | — | — | — | — | 11487 | 17364 | 25768 | ↑ | 29869 | ↑ |
| | RBV | — | — | — | — | — | 1579 | 9477 | 23161 | 37329 | 43155 | 45201 |
| LANDSAT 4 | MSS | — | — | — | — | — | — | — | — | — | 4383 | 14481 |
| | TM | — | — | — | — | — | — | — | — | — | — | — |
| TOTAL | MSS | 6114 | 14674 | 24662 | 35898 | 52160 | 67967 | 82424 | 96922 | 110254 | 119728 | 129826 |
| | RBV | — | — | — | — | 288 | 1867 | 9765 | 23449 | 37617 | 43443 | 45489 |
| TOTAL | MSS | — | — | 2232 | 5581 | 11162 | 19722 | 25281 | 27136 | 35364 | 40591 | 42187 |
| | RBV | — | — | — | — | — | — | 802 | 3470 | 9410 | 9497 | 9531 |

* CCT'S ARE CONVERTED BASED ON USER'S REQUEST

LGSOWG MEETING
NOV 1983

BRAZIL
CNPq / INPE - LANDSAT SYSTEM
 IMAGES DISTRIBUTED TO USERS



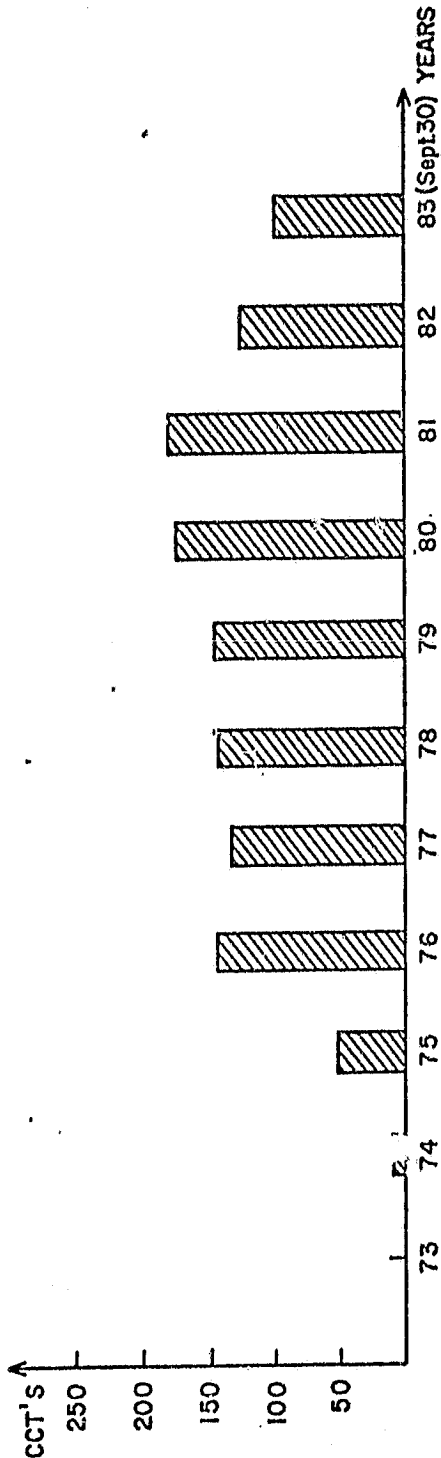
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| | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 (SEPT 30) |
|---------------|-----|------|------|-------|-------|-------|-------|-------|------|------|--------------|
| BRAZ. USERS | 323 | 1230 | 2094 | 10025 | 14971 | 17273 | 16269 | 10216 | 6986 | 5350 | 2313 |
| NON-BRAZUSERS | — | — | — | 230 | 438 | 776 | 2782 | 1184 | 1305 | 748 | 504 |
| TOTAL IMAGES | 323 | 1230 | 2094 | 10255 | 15409 | 18049 | 19051 | 11400 | 8291 | 6098 | 2817 |

LGSO WG MEETING
 NOV 1983

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BRAZIL
CNPq/INPE-LANDSAT SYSTEM
CCT'S PRODUCED TO USERS



| | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83(Sept.30) |
|-----------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-------------|
| BRAZ. USERS | — | 10 | 55 | 120 | 95 | 105 | 107 | 99 | 103 | 78 | 95 |
| NON-BRAZ. USERS | — | — | — | 21 | 37 | 36 | 39 | 77 | 81 | 47 | 24 |
| TOTAL CCT'S | — | 10 | 55 | 141 | 132 | 141 | 146 | 176 | 184 | 125 | 119 |

LGSOWG MEETING
NOV 1983

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BRAZIL
CNPq/ INPE - LANDSAT SYSTEM
IMAGES AND CCT'S DISTRIBUTED

| PROD. | YEARS | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 (SEPT 30) |
|---------------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------------|
| | | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY |
| Images | Images | 323 | 1230 | 2094 | 10255 | 15409 | 18049 | 19051 | 11400 | 8291 | 6098 | 2817 |
| | CCT's | - | 10 | 55 | 141 | 132 | 141 | 146 | 176 | 184 | 125 | 119 |
| Images | Images | - | 4,808 | 26,020 | 57,695 | 118,457 | 232,661 | 251,367 | 338,556 | 291,492 | 484,508 | 192,743 |
| | CCT's | - | - | - | 4,200 | 7,400 | 7,200 | 20,853 | 39,345 | 52,019 | 64,425 | 43,964 |
| TOTAL US\$ | | - | 4,808 | 26,020 | 61,895 | 125,857 | 239,861 | 272,220 | 377,901 | 343,511 | 548,933 | 236,707 |

LGSOWG MEETING
NOV 1983

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- B.6 -

CNPq/INPE

LANDSAT PRODUCT SALES/DISTRIBUTION SUMMARY

FOR THE FOURTH QUARTER (OCT-DEC) 1982

I.A - Total number of LANDSAT images by frames sold or distributed to users and monetary value US\$

| | | | |
|--------|---------------|-----------|------------|
| | Black & White | Color | Total |
| Frames | 813 | 126 | 939 |
| US\$ | 95,598.00 | 10,420.00 | 106,018.00 |

B - Total number and total sales in US\$ of MSS scenes sold or distributed to users in CCT form

| | | |
|----------------------|----|-----------|
| Number of MSS CCT's: | 20 | 11,287.00 |
|----------------------|----|-----------|

C - Total LANDSAT products sold or distributed for the quarter:

| | | |
|---------------------------------------|------|------------------|
| Photographs (B & W and Color Frames): | 939 | 106,018.00 |
| CCT's | : 20 | <u>11,287.00</u> |
| TOTAL | | 117,305.00 |

II. Classification of sales and distribution of photo products and CCT's by type of user

| USER TYPE | PHOTO PRODUCTS | | CCT's | |
|---------------------------|----------------|-------------|------------|------------|
| | % by money | % by frames | % by money | % by CCT's |
| A. National Government | 86.62 | 86.44 | 82.04 | 84.21 |
| B. State/Provincial Govt. | 2.71 | 1.99 | - | - |
| C. Academic | 1.57 | 1.37 | - | - |
| D. Industry | 5.41 | 5.76 | 3.95 | 3.51 |
| E. Individuals | 0.21 | 0.15 | - | - |
| F. Outside the country | 3.48 | 4.29 | 14.01 | 12.28 |
| TOTAL | 100.00% | 100.00% | 100.00% | 100.00% |

CNPq/INPE

LANDSAT PRODUCT SALES / DISTRIBUTION SUMMARY

FOR THE FIRST QUARTER (JAN-MAR) 1983

I.A - Total number of LANDSAT images by frames sold of distributed to users and monetary value in US\$

| | Black & White | Color | Total |
|--------|---------------|----------|-----------|
| Frames | 293 | 38 | 331 |
| US\$ | 18,471.00 | 2,054.00 | 20,525.00 |

B - Total number and total sales in US\$ of MSS scenes sold or distributed to users in CCT form

Number of MSS CCT's : 26 12,722.00

C - Total Landsat products sold or distributed for the quarter:

| | | |
|---------------------------------------|-------|------------------|
| Photographs (Color and B & W frames): | 331 | 20,525.00 |
| CCT's | : 26 | <u>12,722.00</u> |
| | TOTAL | 33,247.00 |

II. Classification of sales and distribution of photo products and CCT's by type of user

| USER TYPE | PHOTO PRODUCTS | | CCT's | |
|---------------------------|----------------|-------------|------------|------------|
| | % by money | % by frames | % by money | % by CCT's |
| A. National Government | 21.14 | 21.15 | 3.84 | 3.85 |
| B. State/Provincial Govt. | 9.97 | 9.97 | 23.09 | 23.08 |
| C. Academic | 28.39 | 28.40 | 49.98 | 50.00 |
| D. Industry | 9.06 | 9.06 | - | - |
| E. Individuals | 16.01 | 16.01 | - | - |
| F. Outside the country | 15.43 | 15.41 | 23.09 | 23.07 |
| TOTAL | 100.00% | 100.00% | 100.00% | 100.00% |

CNPq/INPE

LANDSAT PRODUCT SALES/DISTRIBUTION SUMMARY

FOR THE SECOND QUARTER (APR-JUN) 1983

I.A - Total number of LANDSAT images by frames sold or distributed to users and monetary value US\$

| | FRAMES | | SCENES ON CCT | TOTAL |
|----------|-----------|-----------|---------------|------------|
| | B & W | COLOR | | |
| QUANTITY | 818 | 491 | 19 | |
| US\$ | 79,599.00 | 27,366.00 | 8,722.00 | 115,687.00 |

B - LANDSAT 4 MSS only:

| | FRAMES | | SCENES ON CCT | TOTAL |
|----------|----------|-------|---------------|----------|
| | B & W | COLOR | | |
| QUANTITY | 22 | - | 03 | |
| US\$ | 1,851.00 | - | 893.00 | 2,744.00 |

II. Classification of sales and distribution of photo products and CCT's by type of user

| USER TYPE | PHOTO PRODUCTS | | CCT's | |
|---------------------------|----------------|-------------|------------|------------|
| | % by money | % by frames | % by money | % by CCT's |
| A. National Government | 62.54 | 61.38 | - | - |
| B. State/Provincial Govt. | 4.02 | 3.98 | - | - |
| C. Academic | 2.67 | 2.68 | 42.62 | 42.62 |
| D. Industry | 9.66 | 10.60 | 33.34 | 33.34 |
| E. Individuals | 13.05 | 15.04 | - | - |
| F. Outside the country | 8.06 | 6.32 | 24.04 | 24.04 |
| TOTAL | 100.00% | 100.00% | 100.00% | 100.00% |

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CNPq/INPE

LANDSAT PRODUCT SALES/DISTRIBUTION SUMMARY

FOR THE THIRD QUARTER (JUL-SEPT) 1983

I.A - Total number of LANDSAT images by frames sold or distributed to users and monetary value US\$

| | FRAMES | | SCENES ON CCT | TOTAL |
|----------|-----------|----------|---------------|-----------|
| | B & W | COLOR | | |
| QUANTITY | 1041 | 136 | 74 | |
| US\$ | 57,733.00 | 7,520.00 | 22,520.00 | 87,773.00 |

B - LANDSAT 4 MSS only:

| | FRAMES | | SCENES ON CCT | TOTAL |
|----------|----------|--------|---------------|----------|
| | B & W | COLOR | | |
| QUANTITY | 97 | 07 | 03 | |
| US\$ | 7,913.00 | 470.00 | 1,095.00 | 9,478.00 |

II. Classification of sales and distribution of photo products and CCT's by type of user

| USER TYPE | PHOTO PRODUCTS | | CCT's | |
|---------------------------|----------------|-------------|------------|------------|
| | % by money | % by frames | % by money | % by CCT's |
| A. National Government | 44.68 | 44.72 | 5.58 | 5.58 |
| B. State/Provincial Govt. | 6.14 | 6.10 | - | - |
| C. Academic | 22.06 | 21.58 | 42.86 | 42.86 |
| D. Industry | 6.50 | 6.76 | 30.12 | 30.12 |
| E. Individuals | 5.40 | 5.67 | 7.02 | 7.02 |
| F. Outside the country | 15.22 | 15.17 | 14.42 | 14.42 |
| TOTAL | 100.00% | 100.00% | 100.00% | 100.00% |

ANNEX C

CURRENT LANDSAT PRODUCTS PRICE LIST



PRICE LIST

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LANDSAT DATA

PHOTOGRAPHIC PRODUCTS

| <u>IMAGE SIZE</u> | | <u>SCALE</u> | <u>FORMAT</u> | <u>BLACK & WHITE</u> | | <u>COLOR COMPOSITE</u> | |
|-------------------|-------------|--------------|---------------|--------------------------|-------------|------------------------|-------------|
| <u>MSS</u> | <u>CODE</u> | | | <u>UNIT PRICE</u> | <u>CODE</u> | <u>UNIT PRICE</u> | <u>CODE</u> |
| 50 mm | 1 | 1:3,704,000 | Film Positive | US\$ 44.00 | 23 | - | - |
| 50 mm | 1 | 1:3,704,000 | Film Negative | 53.00 | 26 | - | - |
| 185 mm | 2 | 1:1,000,000 | Film Positive | 89.00 | 25 | US\$ 113.00 | 28 |
| 185 mm | 2 | 1:1,000,000 | Paper | 53.00 | 27 | 89.00 | 29 |
| 370 mm | 3 | 1:500,000 | Paper | 116.00 | 27 | 149.00 | 29 |
| 740 mm | 4 | 1:250,000 | Paper | 228.00 | 27 | - | - |
| <u>RBV</u> | | | | | | | |
| 50 mm | 0 | 1:1,980,000 | Film Positive | 44.00 | 39 | - | - |
| 50 mm | 0 | 1:1,980,000 | Film Negative | 53.00 | 40 | - | - |
| 198 mm | 3 | 1:500,000 | Film Positive | 89.00 | 39 | - | - |
| 198 mm | 3 | 1:500,000 | Paper | 53.00 | 41 | - | - |
| 396 mm | 4 | 1:250,000 | Paper | 116.00 | 41 | - | - |
| 990 mm | 5 | 1:100,000* | Paper | 250.00 | 41 | - | - |

HIGH CONTRAST PHOTO PRODUCTS (MSS DATA)

A new electronic/photographic processing is available for photo products in all sizes, at three times the normal processing price. Recommended for the Amazonian Region.

COMPUTER COMPATIBLE TAPES (CCT)

| <u>TYPE</u> | <u>CODE</u> | <u>TRACKS</u> | <u>BPI</u> | <u>FORMAT</u> | <u>PRICE</u> |
|-----------------|-------------|---------------|------------|---------------|--------------|
| Bulk | 35 | 9 | 800 | 2 tapes (set) | US\$ 805.00 |
| "Edge-Enhanced" | 38 | 9 | 800 | 2 tapes (set) | 1,075.00 |

CCT's are normally shipped air freight collect. Note that there is a delay of four weeks to obtain the export license.

NOTES:

- * RBV data in the scale 1:100,000 also available under special request and controlled by EMFA (Armed Forces Ministry) based on present law for aerial material distribution.
- The payment must be made in advance, through a nominal check to Instituto de Pesquisas Espaciais.
- The photo-product prices include air mail delivery.
- Minimum order: US\$ 88.00.
- Prices valid from April 1st, 1983 (subject to change).

Prices valid from April 1st, 1983
US\$ 5.00 for each photo
and
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requested from April 1st, 1983

April, 1983

Nelson de Jesus Parada
Director



INPE - INSTITUTO DE PESQUISAS ESPACIAIS

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CACHOEIRA PAULISTA-SP - ROD. PRES. DUTRA, Km 40,0 - CX. POSTAL 01 - FONE (0125) 811377 - TELEX(012)1160 - CEP 12 630
CUIABÁ-MT - MORRO DA CONCEIÇÃO S/N - CX. POSTAL 714 - FONE (065) 321-9514 - TELEX(065)1114 - CEP 78 000
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ANNEX D

INPE LANDSAT-4 COVERAGE MAP

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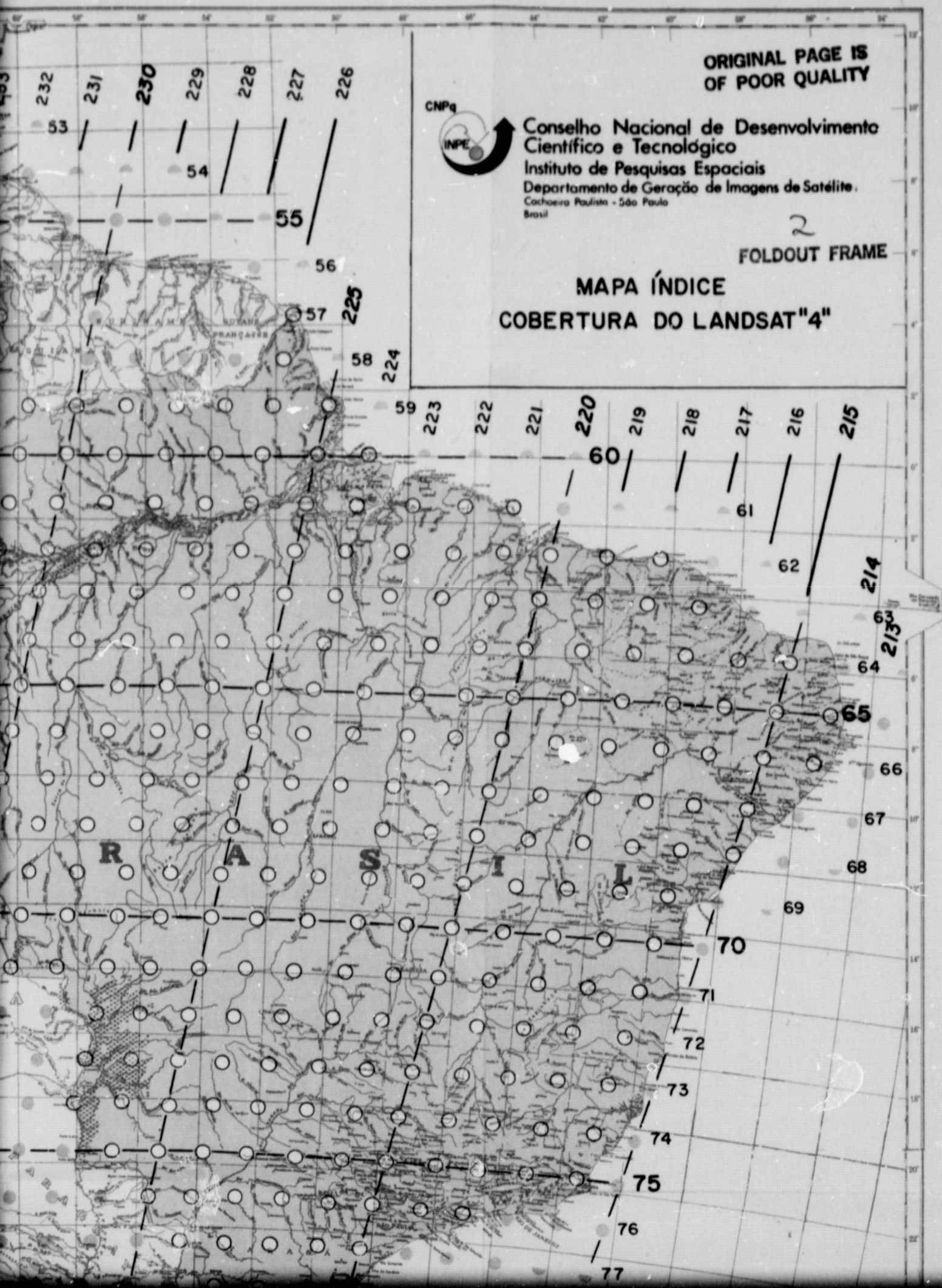
CNPq



Conselho Nacional de Desenvolvimento
Científico e Tecnológico
Instituto de Pesquisas Espaciais
Departamento de Geração de Imagens de Satélite
Cachoeira Paulista - São Paulo
Brasil

2
FOLDOUT FRAME

MAPA ÍNDICE COBERTURA DO LANDSAT "4"



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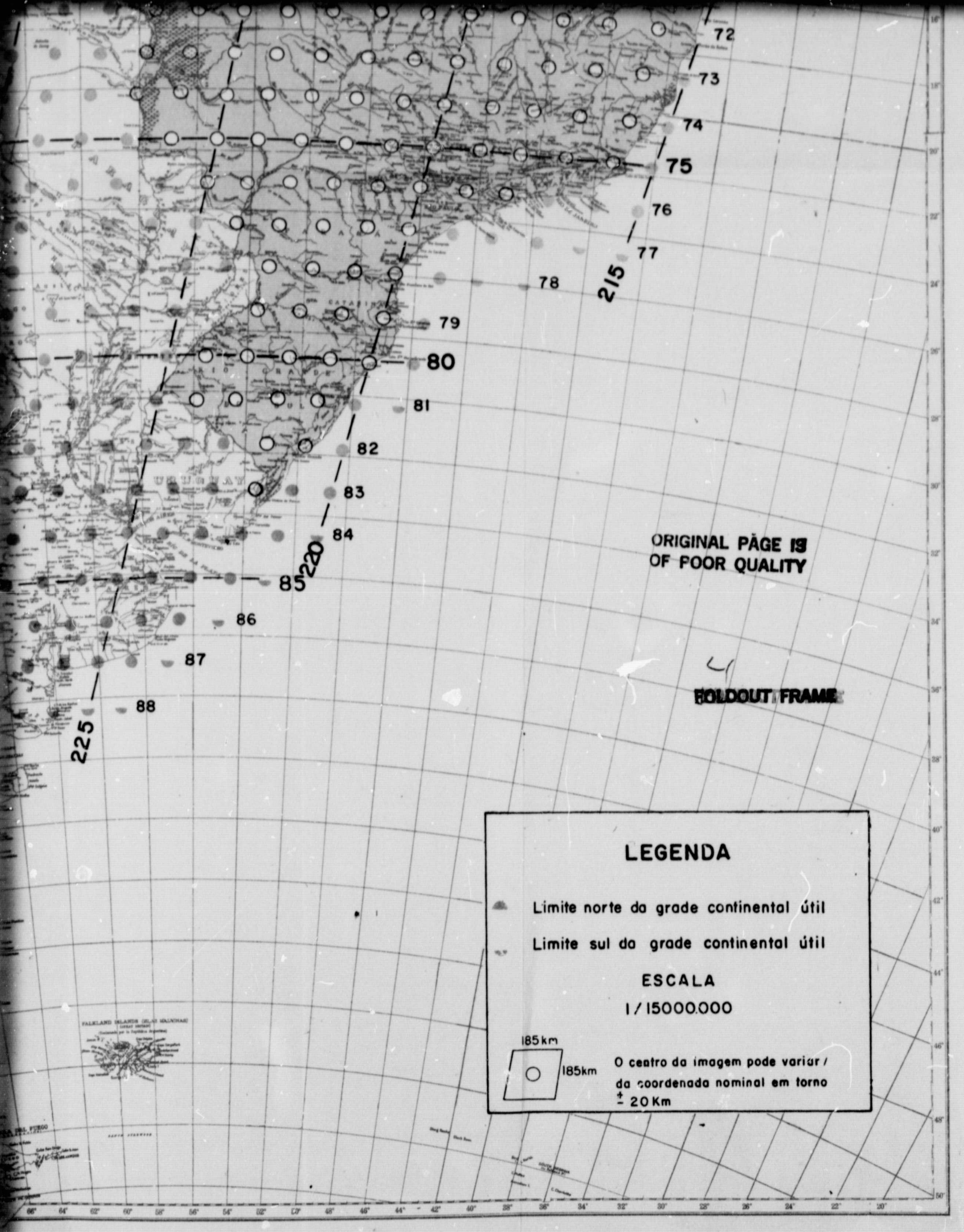
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HOLDOUT FRAME

LEGENDA

Limite norte da grade continental útil

Limite sul da grade continental útil

ESCALA

1/15000.000

185 km



185 km

O centro da imagem pode variar /
da coordenada nominal em torno
± 20 Km